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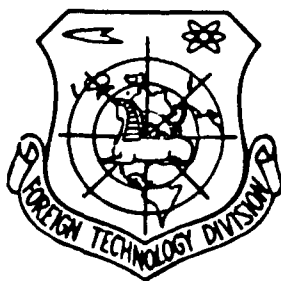
## FOREIGN TECHNOLOGY DIVISION



DESCRIPTION OF INVENTION FOR THE INVENTOR'S CERTIFICATE

by

V. Ye. Gul', L.Z. Shenfil', et al.



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# U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\*ye initially, after vowels, and after Ъ, Ь; e elsewhere.  
When written as ѣ in Russian, transliterate as yě or ě.

## RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh <sup>-1</sup>
cos	cos	ch	cosh	arc ch	cosh <sup>-1</sup>
tg	tan	th	tanh	arc th	tanh <sup>-1</sup>
ctg	cot	cth	coth	arc cth	coth <sup>-1</sup>
sec	sec	sch	sech	arc sch	sech <sup>-1</sup>
cosec	csc	csch	csch	arc csch	csch <sup>-1</sup>

## Russian English

rot curl  
lg log

## GRAPHICS DISCLAIMER

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FTD-1081-90

ABSTRACT

The invention covered in this paper is a cement paste capable conducting electricity with small values of specific resistance and of the temperature coefficient of resistance. The use of dispersed nickel powder in different mixtures is discussed. The characteristics of three different pastes are compared.

Union of Soviet  
Socialist  
Republics

D E S C R I P T I O N   O F  
I N V E N T I O N  
FOR THE INVENTOR'S CERTIFICATE

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invention

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Applicant

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latex products

CEMENT PASTE

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Cement pastes based on epoxide resin plasti-fixed by  
thiocol, hardened by amines or anhydrides of dibasic acids,  
are well-known.

To obtain electrically conducting paste with small values of specific resistance and of the temperature coefficient of resistance, a mixture of nickel powders of different degrees of dispersion is introduced into the composition of the proposed cement paste: the highly dispersed powder PNK [expansion unknown] with particles of a spherical shape and powder of the PNE [expansion unknown] type with particles of an elongated shape. The mean size of the PNE powder particles is 2-3 times greater than the mean size of the PNK powder particles. Before introducing these powders into the paste they are mixed in the PNK/PNE ratio in the range  $1/3 - 1/1$ .

The use of the combination of fine powder with the spherical particles with the powder having the elongated shape and large particle size develops an advantage over the use of each of the powders individually. The coarsely dispersed PNE powder is subjected to a rapid sedimentation, since it contains many very large particles up to 40 microns, and in addition, the mixtures with it have low viscosity. The highly-dispersed PNK powder with a mean particle size of 4 microns settles slowly; with the introduction into a mixture of up to 75% of the powder the

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viscosity of the paste grows so much that work with it is difficult. A paste of the proposed composition, containing a

combination of these two powders with a PNK/PNE ratio in the range of  $1/3 - 1/1$  has a lower value of specific resistance and of the temperature coefficient of resistance than a paste containing these powders separately.

The cement paste with nickel powder is placed in the magnetic field of an electromagnet with an intensity of 100-1000 oersteds and is hardened.

By filling up of vertical slits with the paste a much lower resistance is obtained in the magnetic field, and besides, it is more uniform over the entire height of the slit, since the possibility of a settling of the conducting filler is eliminated. The paste may be used for contacting parts, not solderable with tin alloys, or in those cases where a high soldering temperature ( $200-350^{\circ}\text{C}$ ) is not allowed or scouring of the surface is undesirable.

#### Paste prescription 1

	Component A	Component B
Resin ED-5	100	-
Thiocol NV	-	100
Nickel (PNK/PNE=1/3)	320	400
Triethanolamine	-	50

The ratio of components A/B = 4/1

The working life of the mixture obtained is 16 hours. The paste is hardened for 5 hours at 125°C. The specific resistance is 0.002 ohms/cm.

#### Paste prescription 2

	Component A	Component B
Resin ED-5	100	-
Thiocol NV	-	100
Nickel (PNK/PNE=1/3)	580	400
Maleic anhydride	40	-

Ratio A/B = 1.45/1

The working life of the mixture is 8 hours. The paste is hardened for 4 hours at 75°C. The specific resistance is 0.01 ohms/cm.

#### Paste 3 prescription

Resin ED-5	100
Thiocol NV	20
Nickel (PNK/PNE=1/3)	500
Dibutylphthalate	20
Polyethylenepolyamine	10

The hardener - polyethylenepolyamine is introduced into the paste before it is applied. The working life of the mixture is 0.5 hour. The mixture is hardened at room temperature for 48 hours or 3 hours at 70°C.

#### The object of the invention

The cement paste based on epoxide resin plastified by thiocol, hardened by amines or anhydrides of dibasic acids is distinguished by the fact that, for the purpose of obtaining an electro-conductive paste with small values of specific resistance, and of the temperature coefficient of resistance, a mixture of nickel powders of a varied degree of dispersion is introduced into its composition.



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